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# of Anatomy to Obstetrics.

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B.C.	470—400 ?	**Hippocrates.**
	384—322	Aristotle.
	300	Herophilus.
	53—7 (A.D.)	Celsus.
A.D.	100 ?	**Soranus.**
	130—200	Galen.
	ib.	Aretaeus.
	400 ?	Moschion.
	1316	Mondino di Luzzi.
	1522	**Berengario da Carpi.**
	1543	Vesalius.
	(1552)	Eustachius.
	1561	Fallopius.
	1672	De Graaf.
	1681	Malpighi.
	1726	Ruysch.
	1730	Douglas.
	1745	Haller.
	1747	Albinus.
	1754	Smellie.
	1754	Donald and Alexander Monro.
	1757	Roederer.
	1774	William Hunter.

Chronological List of Names referred to in "Early Contributions of Anatomy to Obstetrics" arranged according to the year in which their Work appeared. (*For system of grouping, see text.*)

B. P. Watson M.D.

EARLY CONTRIBUTIONS OF ANATOMY TO OBSTETRICS.

BY

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(*Read before the Edinburgh Obstetrical Society, 9th May* 1888.)

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"With us ther was a Doctour of Phisik,
In al this world ne was ther non him lyk
To speke of phisik and of surgerye;
. . . .
Wel knew he the olde Esculapius,
And Deiscorides, and eek Rufus;
Old Ypocras, Haly, and Galien;
Serapyon, Razis, and Avycen;
Averrois, Damascien, and Constantyn;
Bernard, and Gatesden, and Gilbertyn."
Chaucer's Prologue.

"There, now! What do you say to this copy of Joannes de Ketam, Venice, 1522? Look at these woodcuts—the first anatomical pictures ever printed, doctor, unless these others of Jacobus Berengarius are older! . . . . . Take a look, too, at my Vesalius—not the Leyden edition, doctor, but the one with the grand old original figures,—so good that they laid them to Titian. And look here, doctor, I couldn't help getting this great folio Albinus, 1747,—and the nineteenth century can't touch it, doctor—can't touch it for completeness and magnificence,—so all the learned professors tell me! Brave old fellows, doctor, and put their lives into their books as you gentlemen don't pretend to do now-a-days."
Master Byles Gridley in Oliver Wendell Holmes' "Guardian Angel."

EARLY CONTRIBUTIONS OF ANATOMY TO OBSTETRICS.

In these "Early Contributions of Anatomy to Obstetrics," we have to review the time from the foundation of medicine under Hippocrates to the end of the sixteenth century. We may group them under three periods—1. Before the Christian era; 2. From the commencement of the Christian era to the fall of Rome; 3. (after the break of the ten centuries of the Dark Ages) From 1500 A.D. to the close of the sixteenth century. Each of these periods begins with an important name—the first with Hippocrates; the second with Soranus; the third with Berengario da Carpi.[1]

First Period.

This period extends up to the Christian era; and, in addition to Hippocrates, with whom it begins, we have to notice the names of Aristotle, Herophilus, and Celsus.

In the history of medicine, the name from which everything dates is *Hippocrates*, the "Father of Medicine" (*flor. circa* 470–400 B.C.).[2] He dissected animals only. This probably explains the idea which prevailed in his time, and even at a much later date, that the human uterus consisted of two cavities. One of his aphorisms runs, "Male fœtuses are oftenest in the right, and females in the left."[3] The same idea is seen in the less certain Hippocratic writing, *περὶ ἐπικυήσιος*, in which the double cavity of the uterus is held to explain superfœtation.

The next name of interest is that of *Aristotle* (B.C. 384–322). Of him Haller, in his *Encyclopædia of Anatomists*,[1] says, "he dissected even living animals, and, first in history, took care to have anatomical plates made, lettered just as ours are. . . . . He often compared human viscera with those of animals, so to speak, one by one, so that we cannot at all deny that this great man had some knowledge of human anatomy." Although Aristotle gives us no special description of the uterus in the human female, he evidently believed that it was bicornuous like that of the lower animals, as the following references show:—"(10.) . . . . The uterus of all animals, in which it lies near the genitals, is bifid, one half on the right and the other on the left." And, in the next paragraph, he puts the uterus of man in the same category as that of the dog, pig, horse, and horned animals.[2] Further, in speaking of the cause of difference of sex, he refers to the view that males were developed in the right, and females in the left half of the uterus.[3]

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[1] We make this third period begin with Berengario and not Mondino advisedly, for reasons to be given afterwards.

[2] Aulus Gallius says that Hippocrates was a contemporary of Socrates, but older than he; the dates of his birth and death are unknown (*Francis Adams*).

[3] *Magni Hippocratis Opera Omnia* in *Medicorum Græcorum Opera quæ extant.* Editionem curavit D. Carolus Gottlob Kühn. Lipsiæ, 1827. Tom. xxiii. p. 745.

Herophilus of Chalcedon (B.C. 300) has, according to Sir William Turner,[4] along with Erasistratus, the distinction of being known to posterity as the first "who dissected and described the parts of the human body. Both these physicians flourished under Ptolemy Soter, and probably Ptolemy Philadelphus, and were indeed the principal supports of what has been named in medical history the Alexandrian School, to which their reputation seems to have attracted numerous pupils." My reason for mentioning Herophilus here is that Haller[5] says of him that "he was diligently versed in the genital organs of both sexes, and discovered the epidydymis. He points out that the os of a gravid uterus before labour will not admit a stilus. . . . . In some women he saw four veins coming from the renal vessels to the uterus—probably the spermatic vessels." As his works have not been preserved, these facts are gained from references in other writers.

The eight books of *Celsus* (B.C. 53 to 7 A.D.) contain but scanty references to female anatomy. In lib. iv. 1,[6] he says,—

> "The vulva in virgins is somewhat small. Moreover, in women, except when they are gravid, not much larger than can be embraced by the hand. It being straight and continued in a neck, called the canal (vagina),[7] rising in a line with the middle of the belly, turns thence a little

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[1] *Bibliotheca Anatomica quâ scripta ad anatomen et physiologiam facientia a rerum initiis recensentur.* Lugduni Batavorum, ex officina Haakiana. MDCCLXXIV., Tom. i. p. 3.

[2] *De Animalibus Historia*, lib. iii. cap. i. On page 36 of vol. v. of *Aristoteles Opera Omnia*, Gr. et Lat., Paris 1857-1874.

[3] *Ibid.*, p. 392.

[4] Article "Anatomy" in *Encyclopædia Britannica*, 9th edition.

[5] *Op. cit.*, tom. i. p. 60.

[6] *Aurelii Cornelii Celsi Medicinæ.* Impressum Venetiis per Philippum pinzi. Sumptibus domini Benedicti fontana. Anno domini 1497, die vi. Mai.

[7] Ea recta continuataque cervice quem canalem vocant. By "canalem" is evidently meant the vagina.

> towards the right hip; then, passing above the rectum, becomes united at its side to the ilia of the female. The ilia themselves are placed between the hips and pubis in the lower belly."

He writes about procidentia of the os vulvæ (lib. vi. 18); the removal of calculus (lib. vii. 4); atresia (lib. vii. 28), mentioning two varieties ("when uterine, the membrane is opposite to the mouth of the vulva; when from ulceration, it fills it with flesh"), and describing how the hymen is to be incised crucially and then cut away; but he gives no anatomical facts. And even in his lucid and judicious directions for the extraction of a dead fœtus (lib. vii. 29) we feel the same want. I draw your attention to the scantiness of female pelvic anatomy in the works of Celsus (whose life belongs to the period before the Christian era) in order to contrast it with the remarkable knowledge of the next writer, who begins what we have made our "Second Period."

SECOND PERIOD.

This period extends to the fall of the Western Empire and the commencement of the Dark or Middle Ages. Besides Soranus, with whom we make it begin, we have to notice Galen, Aretæus, and Moschion.

The first great contribution of Anatomy to Obstetrics is to be found in the remarkable work of *Soranus of Ephesus*, "Concerning Diseases of Women," (of which we have now a scholarly edition by Ermerins[1])—a work which, with the exception of a single chapter, has only in this century been rescued from an undeserved oblivion most hurtful to obstetrical and gynæcological science.

The first edition of this book, as we learn from Ermerins' preface, was published in 1838 by F. R. Dietz from two codices—a Parisian of the fifteenth and an Italian of the sixteenth century. Soranus himself must have flourished a generation ("lustra aliquot," says Ermerins) before Galen, who lived from about 130 to 200 A.D., as that physician had a dispute with a disciple of Soranus.

The single chapter on anatomy was published in Paris in 1554 along with three monographs of Ruffus Ephesius. This volume is in the College of Physicians' Library. On the first page we have a quotation from Suidas, a Greek grammarian who wrote in the twelfth century A.D. a lexicon forming a kind of cyclopædia and dictionary:—"Soranus Ephesius, the son of Menander and Phœbe, lived some time at Alexandria, practised as a physician at Rome in the reigns of Trajan and Hadrian, and composed many beautiful books:—Books about Women, four; Lives of Physicians, Selections, and Collections of Writings, ten books; and other things of interest." We have reproduced in our illustrations the opening sentence of this chapter.

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[1] *Σωράνου Ἐφησίου περὶ γυναικείων παθῶν*: Sorani Ephesii liber de muliebribus affectionibus. Recensuit et Latine interpretatus est Franciscus Zacharias Ermerins. Trajecti ad Rhenum apud Kemink et filium, 1869.

Of him Haller says,[1] "Soranus Ephesius lived before Archigenes, who speaks of the Alopecia of Soranus. He was the chief of the Methodici, whom Cælius Aurelianus either translated into Latin or copied." Haller here places Soranus among the Methodists—one of the three schools into which the followers of medicine in ancient times were divided. These schools are known as the Empirical, the Rational, and the Methodist. The different standpoint of each school is thus described by Dr Adams in his Preface to the Seven Books of Paulus Ægineta. "The Empirics held that observation, experiment, and the application of known remedies in one case to others, presumed to be of a similar nature, constitute the whole art of cultivating medicine. . . . . The sect called the Rational, Logical, or Dogmatical, holding that there is a certain alliance and connexion among all the useful and ornamental arts, maintained that it is the duty of the physician not to neglect any collateral science or subject. . . . . The sect of the Methodists, rejecting altogether the consideration of remote causes, which they held to be of no importance to the cure, and giving themselves up to too bold a classification of diseases, according to certain hypothetical states of the body in which they were supposed to originate, fettered themselves too much with a few general rules, which they held to be so universally applicable that they would scarcely allow of their being modified by incidental circumstances in any possible contingency." Taking the description which Dr Adams here gives of the Methodici, we find Soranus to have been much broader than his school; and, whatever his theory was, we should rather place him alongside of Hippocrates, Galen, and Ægineta in the Rational school.

The book "Concerning Diseases of Women" consists of sixty-six sections; and his scientific arrangement and treatment of the subject are more like the nineteenth century than the second. In his preface, after mentioning other possible divisions of the subject—as into Theoretical and Practical; Hygiene and Treatment of Disease; what is According to and what is Against Nature; Physiology, Pathology, and Therapeutics—he says that his division is into Obstetrics and Subjects related to Obstetrics. After describing the qualifications desirable both in studying and practising the art, he says, "But since we are about to pass to the description of what occurs in women in health, we must first explain the structure of the organs, which in part can be studied directly, in part by anatomy; and although it is of no use, nevertheless, since it is held to be a part of enlightened education, we shall teach what is known of it. For we shall be more readily believed when we say that anatomy is useless, if we have first shown ourselves to be acquainted with it; nor shall we provoke the suspicion that to

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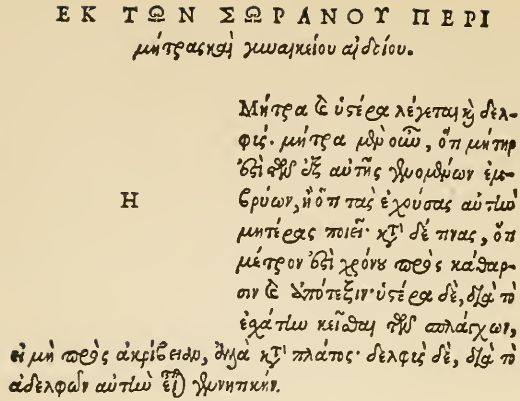
[1] *Op. cit.*, p. 71.

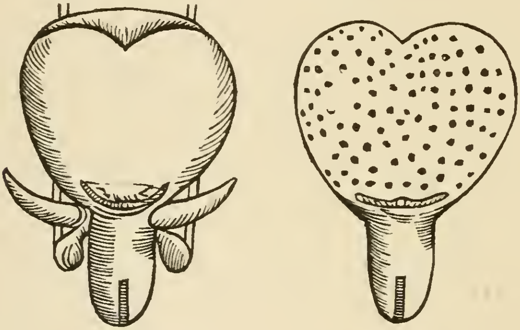


ΕΚ ΤΩΝ ΣΩΡΑΝΟΥ ΠΕΡΙ
μήτρας καὶ γυναικείου αἰδοίου.

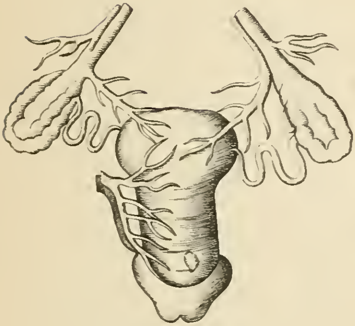
Η

Μήτρα καὶ ὑστέρα λέγεται καὶ δελφύς. μήτρα μὲν οὖν, ὅτι μήτηρ ἐστὶ τῶν ἐξ αὐτῆς γινομένων ἐμβρύων, ἢ ὅτι τὰς ἐχούσας αὐτὴν μητέρας ποιεῖ· κατὰ δέ τινας, ὅτι μέτρον ἐστὶ χρόνου πρὸς κάθαρσιν καὶ ἀπότεξιν· ὑστέρα δέ, διὰ τὸ ἐσχάτην κεῖσθαι τῶν σπλάγχνων, εἰ μὴ πρὸς ἀκρίβειαν, ἀλλὰ κατὰ πλάτος· δελφὺς δέ, διὰ τὸ ἀδελφῶν αὐτὴν εἶναι γεννητικήν.

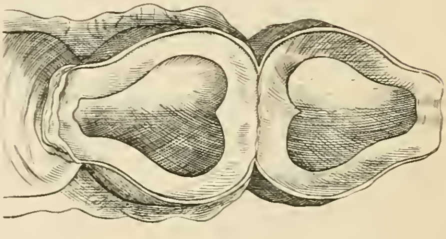
Reproduction of opening sentence from Soranus—*the MS. published in Paris in 1554.*



Drawing of uterus (reduced ½ scale) from Berengario da Carpi.



Drawing of uterus from Moschion.



Drawing of uterus (reduced ½ scale) from Vesalius cover our ignorance we have depreciated one of those subjects which are deemed useful." After paying this tribute to the view of his school, he gives an admirable account of the anatomy of the organs of generation. Ermerins gives the Greek text compared and revised, and also a Latin version. We have made the following translation of the chapter on anatomy from the Greek original. No apology is needed for introducing it here, so that English readers may become acquainted with this splendid and long-buried contribution of anatomy to obstetrics.

[*Translation of the Chapter on the Anatomy of the Female Organs of Generation, from the work of Soranus on "Diseases of Women."*]

Chap. III.—The Nature of the Uterus and Female Pudenda.

Uterus.—The Uterus, ἡ μήτρα, is called also ὑστέρα and δελφύς: μήτρα, because it is *mother* (μήτηρ) of the fœtuses born from it or because it makes those having it mothers, according to some because it has a *measured* period (μέτρον χρόνου) for menstruation and bringing-forth; ὑστέρα, because it occupies, if not exactly at any rate on the whole,[1] the *lowest part* of the female intestines; δελφύς, because it brings forth *brothers* (ἀδελφοί).[2]

Its Position.—It lies in the space between the acetabula, between the bladder[3] and the rectum, resting upon the latter, but beneath the bladder either in whole or in part according to change in its size. For in infants it is smaller than the bladder, and hence comes to be entirely under it; but in virgins at puberty it reaches the same height as the bladder. In those more advanced in age and in married persons, especially multiparæ, it is even larger so that it extends to where the colon stops. It is still larger in pregnancy, as any one can see—the peritoneum and hypogastrium being pushed forward according to the development of the fœtus with its membranes and fluids. After delivery it becomes contracted, but retains a larger size than before pregnancy. Under these circumstances, accordingly, it is larger than the bladder and does not lie right under it;[4] for, in front, the neck of the bladder projects beyond, ending in the urethra and stretched alongside of the whole vagina,[5] but falls short of the uterus above. Behind, the fundus of the uterus lies higher than the fundus of the bladder, being under the umbilicus; so that the cavity of the bladder lies upon the neck of the uterus and its fundus upon the cavity of the latter.

Ligaments.—The uterus is connected by thin membranes, above with the bladder, below with the rectum, to the sides and behind with the parts springing from the ilia and sacrum. When these [membranes] are shortened by inflammation, it is dragged on and lies to the side;[1] when they are weakened and relaxed, it falls down: not because it is an animal[2] as some have thought; but having, as it were, a sensitiveness, and thus being contracted by astringents and relaxed by emollients. The shape of the uterus is not convoluted as in the brutes, but more like a cupping-glass.[3] For, beginning from the rounded and broad end at the fundus, it contracts sensibly to the narrow mouth. The first and projecting part of it is called *στόμιον*;[4] next comes the *τράχηλος*,[5] then the *αὐχήν*;[6] these last two together form the *καυλός*[7] Where it broadens out beyond the constriction of the neck. we have first the *ὦμοι*,[8] then the *πλευρά*;[9] last of all the *πυθμήν*,[10] beneath which is the *βάσις*.[11] The whole space is called *κύτος*,[12] *γάστρα*,[13] *κόλπος*.[14] The *os uteri* lies in the centre of the female genital organs, for the cervix is closed in by the labia;[15] the os is removed from these, in some more, in some less, according to age: in adults, generally 3½ or 4 inches;[16] in those who have borne children, it comes to be nearer through elongation of the cervix. The size [of the os uteri] varies, and is in most persons normally as large as the outer end of the auditory meatus. It opens at certain times: as in the orgasm of coitus to receive the semen,[17] during menstruation that the blood may escape,[18] in pregnancy according to the growth of the embryo, and in labour to the greatest extent until it will admit the full sized hand. In texture, it is soft and fleshy in virgins, like the sponginess of the lungs or the smoothness of the tongue; but in those who have borne it becomes more callous, like the head of a polypus, or, as Herophilus[19] says, like the end of a bronchus—becoming hard through the passage of discharges and by parturition.

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[1] Εἰ καὶ μὴ πρὸς ἀκρίβειαν ἀλλὰ κατὰ πλάτος.

[2] Liddell and Scott give μήτηρ, *a mother*, as the derivation of μήτρα. With regard to ὑστέρα, they say that "if from ὕστερος, *the last or lowest part of the female intestines*, it cannot be connected with the Latin *uterus*, which is probably akin to ἔντερα: but more probably it *is* akin to *uterus* and not to ὕστερος." They make ἀδελφός come from δελφύς, not δελφύς from ἀδελφός.

[3] This description is evidently taken from the dissection of a cadaver in the horizontal posture.

[4] *Under*, from the dissector's point of view; *behind*, in the erect posture.

[5] Ermerins inserts καὶ παρατρυπώμενος (*and being perforated*). He says that the codex has παρατρίβομενος (*being rubbed against it, i.e., being in close contact with it*).

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[1] It is interesting to note that, even at this early period, the effect of cellulitis in causing uterine displacement had been noticed.

[2] See one of the passages quoted from *Aretaeus*.

[3] Σικύα. literally a *gourd;* then a *cupping-glass*, because shaped like the long gourd. In the edition of Celsus by E. Milligan, an ancient brazen cucurbitula is figured; but the belly is rounder and the neck is foreshortened. Celsus tells us that it was used by pouring a hot liniment into the flask, the mouth of which was then applied to the skin.

[4] *i.e., mouth*, now *os uteri*, by which term we shall translate it throughout.

[5] *Neck*, now *cervix*.

[6] *The narrow part of the neck*, now *isthmus*.

[7] The *stem*.

[8] *Shoulders*.

[9] Literally *ribs*, then *sides*.

[10] Literally the *hollow or belly of a drinking-cup;* including more than what we now call fundus, which Soranus names *βάσις*.

[11] The *lowest part or base*, now *fundus*. What we call the "body of the uterus," Soranus thus divides into two portions: (1), the *pleura* or sides, corresponding in position to the horns; (2), the *puthmēn* or widest part, corresponding to the rest of the body except the *basis* or fundus.

[12] The *hollow*.

[13] The *belly*.

[14] Literally a *hollow*, then a *bosom-like fold of a garment*. The term is usually restricted to the vagina, hence our word "colpitis," and is thus used by Soranus further on; here it includes the cavity of the uterus.

[15] Πτερυγώματα, literally *wings; Vide postea* on "External Genitals."

[16] Literally five or six fingerbreadths, the fingerbreadth being about $\frac{7}{10}$ inch. This is more accurate than that given in Quain's *Anatomy*, which makes it 4 in. along anterior wall and 5 to 6 in. along posterior.

[17] *Cf.* J. Matthews Duncan's *Lectures on Sterility*, London 1884, p. 131.

[18] *Cf.* Burton's "Observations on the Cervix becoming more Patulous during Menstruation," *Brit. Med. Jour.*, 1884, ii. p. 607.

[19] *Vide antea.*

Structure.—The whole uterus is as far as possible fibrous,[1] not composed of fibres alone, but also of veins, arteries, and flesh. Of these, the fibres come from the membranes of the spine, but the arteries and veins from the vena cava and the large artery lying on the spinal column—for two veins spring from the vena cava and two arteries from the large artery, of which one vein and artery run towards each kidney ; but before these enter the kidneys they bifurcate, two branches going to each kidney and two embracing the uterus, so that the latter receives four vessels — two arteries and two veins.[2] From these, an artery and vein pass to each ovary.[3]

Ovaries.—The Ovaries grow out from the side near the isthmus about opposite to the middle of the uterus.[4] They are not of firm consistence, are glandular, and are covered with their own membranes. In shape they are, unlike the male organs, long and somewhat flat ; and are round and broad at their base. The spermatic vessel from the uterus is carried out of each ovary, and, being placed along the sides of the uterus as far as the bladder, enters into the neck of the latter.[5] Whence it appears that the seed of the female, inasmuch as it is poured out, does not play a part in the production of life. Of this we shall speak when we treat of the seed.[6] There are some, amongst whom is Chius, who say that there are suspensory ligaments for the ovaries ; and we have seen the same with our own eyes in a woman suffering from hernia, in whom during the operation the ovary fell down through relaxation of the vessels which support and surround it, and with these the suspensory ligament came down.[7]

Surfaces of Uterus.—The whole uterus is made up of two coats, which differ in their arrangement like parchment.[8] The outer is more fibrous and smooth and firm and white ; the inner is more fleshy and villous and soft and red[9]—intertwined throughout with vessels, which are most numerous and noteworthy over the broadest part of the body,[10] where the seed becomes adherent and from which the menstrual discharge takes place.[11] Those two coats are kept together by softer and more fibrous bands ; and, accordingly, when these are stretched, the uterus frequently falls down, the fibrous coat remaining in its place, the other one descending inverted.[1] Further, commonly in multiparæ, the uterus has folds running towards the body, usually two, and closely folded so as to be like felt; in those who have borne, the whole uterus is stretched out and becomes rounded.[2] Diocles[3] says that there are cotyledons[4] in the cavity of the uterus called πλεκτάναι[5] or κεραίαι,[6] which are nipple like outgrowths, broad at the base, and narrowing to the top; that they lie on both sides, being devised by Nature for the sake of teaching the embryo to practise beforehand how to draw at the nipples of the breast.[7] But they make anatomy speak falsely, for the cotyledons are not found; and what they say about them is contrary to Nature, as has been proved in treatises on generation.

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[1] *Νευρώδης* from *νεῦρον*, a sinew, nerve.

[2] It is difficult to understand Soranus' description here. It is only on the left side that the uterine veins open into the renal. We must, however, remember that fifteen centuries must elapse before the idea of filling the vessels with wax, so as to allow of their being dissected out, springs up in the fertile mind of Swammerdam (1672).

[3] *Δίδυμος*, literally *double*, then *twin*, then *testicle* or *ovary*.

[4] *Παρ' ἑκάτερον πλευρὸν ἀνὰ εἷς.* "Pleura" corresponds to the middle segment of the side of the uterus, *v. antea.*

[5] It is not clear what vessel is here referred to. From the fact that it enters the neck of the bladder, we might suppose it to be the ureter ; but, as it is distinctly said that it enters the ovary and also runs down the side of the uterus, it is more probably the uterine artery.

[6] Soranus evidently missed the discovery of the tubes made by Fallopius fourteen centuries afterwards, and supposed that the ova were carried into the bladder and ejected.

[7] Perhaps the Fallopian tube is referred to here.

[8] *Τῶν χαρτῶν.*

[9] Soranus is here describing the wall of the uterus as seen on its two *surfaces*—the peritoneal and mucous-membrane ; we must remember that he is not describing the coats of the uterus as in section—an altogether modern method. In preparing parchment, two layers of papyrus were woven together.

[10] *Πυθμήν*, the widest part of the body, *v. antea.*

[11] This incidental reference to the menstrual discharge as coming from the body of the uterus is worthy of note.

Sympathetic Relations of Uterus.—We must not suppose that the uterus is essential to life, for not only does it fall down, but in some it may be cut away without causing death,[8] as Themiso[9] has recorded, and they say that in Galatia pigs fatten after the uterus is cut out. Nevertheless, it affects sympathetically the stomach and membranes.[10] It has, moreover, a certain sympathetic relation to the mammæ: at all events, when it grows larger at puberty, the breasts also swell out simultaneously; and although it brings the seed[11] to perfection, yet the mammæ prepare milk for the nourishment of the offspring when born; and when the menses flow freely the milk dries up, while as long as the milk comes freely the discharge does not appear; so also in those past their prime, when the uterus grows smaller the mammæ likewise somehow waste away, and when the embryo is diseased their size is reduced—in fact when in the pregnant we see the breasts fall away and contract, we anticipate that there will be a miscarriage. So much for the nature of the uterus.

Vagina.—The Female Pudenda are also called κόλπος γυναικεῖος.[12] The wall is fibrous and somewhat rounded, like intestine, more roomy at its inner and narrower at its outer end; and in it sexual intercourse takes place. It is attached internally to the cervix uteri, externally to the labia, inferiorly to the breech, laterally to the fleshy parts of the acetabula, superiorly to the neck of the bladder—for this last, as we have said, extending beyond the os uteri and being placed close above the genitals, opens at its end into the urethra. Accordingly, it is evident that the vagina lies beneath the neck of the bladder, but upon the anus and the sphincter and the lowest part of the rectum. Its length, as we have mentioned above, varies not only with age, or with sexual intercourse, in which the cervix being elongated like the male organ takes up some part of the

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[1] Soranus apparently thinks that in Inversion the whole wall is not inverted.

[2] Soranus is here apparently speaking of the two stems of the arbor vitæ; and does he here, like Küstner, refer to the arbor vitæ's being less marked in multiparæ than in nulliparæ? We note that he does not think it worth while to contradict the received view that the uterus consisted of several cavities; he contents himself with simply describing what he has seen.

[3] Diocles lived about the end of the 4th century B.C.

[4] This word means (1), *the suckers or the feelers of the polypus*; (2), hence the *feelers* themselves; also (3), in plural, *certain vessels at the mouth of the uterus* of some animals (Hippocrates).

[5] Literally, *feelers* of the polypus.

[6] Literally, *horns*.

[7] Soranus is evidently here poking fun at Diocles.

[8] Where is the recorder of recent statistics of extirpation of the uterus?

[9] Quoted elsewhere by Soranus, but I cannot find when he lived

[10] Μήνιγγες—nervous system (?).

[11] *i.e.*, ovum or embryo.

[12] Here used, as will be evident from what follows, of the vagina. He goes on to describe the vaginal walls, etc.

> vagina; but also some have by nature a longer cervix, and others a very much shortened one. The length [of the vagina] is in most adults 4 inches. It is certainly closed and narrower in virgins, being furnished with folds held together by vessels taking their rise from the uterus; these cause pain in first sexual intercourse when the folds are opened out, for they are broken and discharge the blood usually seen. For the view is false that a thin partition-membrane has grown up, barricading the vagina; that this is broken, and causes pain at first sexual intercourse or sooner when menstruation sets in; and that, grown thicker, it produces the disease called atresia. For in the first place, it is not found in dissection; and in the second place, in virgins it ought to offer resistance to examination with a probe, for the probe penetrates deeply; in the third place, if the membrane was the cause of pain in intercourse, excessive pain must necessarily accompany the appearance of menstruation, and not be delayed till coitus.[1] Further, if the membrane's becoming thick caused atresia, we should find it in the same place constantly, in the same way in which we always see other parts each in its own place. But in cases of atresia, the obstructing membrane is found at one time near the labia, at others in the middle of the vagina,[2] at others at the os uteri. So much for the vagina.
>
> External Genitals.—The parts seen outside are called πτερυγώματα,[3] forming, as it were, the lips of the vagina. They are thick, fleshy, and extending down beside each thigh, as it were, diverging from each other; above, they end in what we call νύμφη,[4] which is the beginning of the two labia. In Nature this fleshy prominence is muscular, and it is called "nymphē" through its being covered as brides are veiled.[5] Below the clitoris another fleshy prominence lies concealed, which belongs to the neck of the bladder; it is called the urethra. The rough portion forming a fold within is called χεῖλος.[6]
>
> Bladder.—The Female Bladder differs from that of the male; for the former is larger, and has the neck curved, the latter is smaller with a straight neck.
>
> The nature of the female organs having been described, we go on to the functions of the Uterus:—Menstruation, Conception, Pregnancy; and, after development of the fœtus, Parturition. Following the natural order, we shall speak first of Menstruation."

In reading this chapter no one can fail to be impressed with the scientific orderliness with which the subject is treated, the exclusion of matter adventitious to anatomy, and the dogged keeping to facts.

In the subject matter we note the following statements as of peculiar interest in relation to more modern work:—"When these (the ligaments) are shortened by inflammation, it (the uterus) is dragged over and lies to the side." "It (the os externum) becomes open at certain times, as in the orgasm of coitus, to receive the semen, and during menstruation that the blood may escape.

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[1] Soranus here combats some view that the hymen was always imperforate, and hence had to be broken even when menstruation sets in.

[2] Αἰδοῖον—here used for the vagina.

[3] *i e.*, *wings*—the *labia majora.*

[4] Not what we now term the nymphæ (labia minora), but the clitoris, as is evident from his description of its relations.

[5] Διὰ τὸ ταῖς νυμφευομέναις ὁμοίως ὑποστέλλειν τὸ σαρκίον.

[6] *i.e.*, *a lip*—the labium minus.

. . . . the body of the uterus where the seed becomes adherent and from which the menstrual discharge takes place." "Further, and most commonly in nulliparæ, the uterus has folds running towards the body, usually two, and folded like felt." "But now in cases of atresia the obstructing membrane is found at one time near the labia, at others in the middle of the vagina, at others at the os uteri." The references to operations for hernia in which the ovaries were seen and to the extirpation of the uterus (apparently prolapsed) are of great interest.

As to style, it has that rather of the scientific teacher than of the investigator, and is therefore to be regarded, I think, as the finished product of anatomical investigation done by many hands, probably in the dissecting rooms at Alexandria. This only makes it the more remarkable, that Galen, whom we pass to next, either did not know or took no notice of the book, and the more to be regretted that all the work on which it was based was lost, and had to be done over again fourteen centuries later at the Revival of Learning.

Galen, who was born at Pergamos in Asia Minor in 130 A.D., lived under Hadrian, the Antonines, Commodus, and Severus. Although distinguished in human anatomy generally, he neglected altogether the anatomy of the female pelvis. In the section, Γαλήνου περὶ μήτρας ἀνατομὴς βίβλιον,[1] he begins as follows:—

> "We shall treat of the situation of the uterus, its size and form, whence it hangs. how it is nourished, to what it is attached, what it touches. what things surround it, and what things are produced in the womb during pregnancy round the chorion and membranes embracing the fœtus." He describes the uterus as extending above with its fundus to the umbilicus, below to eleven fingers'-breadths from the vulva, and reaching with its horns to either ilium. In describing its form also, he says that the shape of the fundus is like the bladder, but that it has mammary processes extending towards the ilia. Further on, he says that "in woman and in other animals which are like to women in the uterus, such as goats and cattle, ... fœtuses are found not in horns but in the rest of the whole cavity." "But these (as I think) mix up and suggest to the mind absurdities, since they cannot explain the use and action of the horns. And as my discourse would be too long and also unequal if I spoke of the use and action of the horns and not of the other structures round the uterus, on that account this subject is to be deferred to another treatise."

From the foregoing it will be evident that Galen had never opened a female pelvis, and it is remarkable that he should have sat down gravely to write an account of what he had never seen. In a note on this book Kühn says, "humanos uteros non incidit, sed simiarum aliorumque animalium."

Aretæus is considered by Dr Francis Adams, the learned editor of a collection of his works for the Sydenham Society, to have been a contemporary of Galen. He infers this from the connexion between their literary and professional views, and that the only way of accounting for the remarkable fact that neither mentions the writings of the other is that they were contemporaries, and were prevented "by rivalry or the established usage of living authors" from referring to each other's work. Of Aretæus nothing is known except that he is called the Cappadocian, from which we may suppose that he was a native of that region of Asia Minor. He gives us a fair account of the ligaments of the uterus; and, speaking of prolapsus, he says:[1]—

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[1] Tom. ii. of the complete edition of his works, comprising 20 volumes of the *Medicorum Græcorum Opera quæ exstant:* Editionem curavit D. Carolus Gottlob Kühn. Lipsiæ 1827.

> "The membranes which are inserted into the flanks, being the nervous (fibrous) supporters of the uterus, are relaxed; those of the fundus, which are inserted into the loins, are narrow [evidently, the round ligaments]; but those at its neck, on each side of the flanks, are particularly nervous (fibrous) and broad, like the sails of a ship"

The mobility of the uterus must also have struck him: for he says in speaking of "hysterical suffocation"—

> "In the middle of the flanks of women lies the womb, a female viscus, closely resembling an animal; for it is moved of itself hither and thither in the flanks, also upwards in a direct line to below the cartilage of the thorax, and also obliquely to the right or to the left, either to the liver or spleen; it likewise is subject to prolapse downwards, and, in a word, it is altogether erratic."[2]

The following reference to what we now speak of as the decidua is of interest:—

> "It would appear that of the double membrane of the womb, the internal lining coat is sometimes torn from the contiguous one, for there are two transverse plates of the coat; this, then, is thrown off with a flux [menstruation?] and in abortion and laborious parturition, when it adheres to the placenta."[3]

Moschion.—The next contribution of Anatomy to Obstetrics is a book on "Diseases of Women," which has given rise to an extremely interesting critical inquiry as to its origin. Both a Greek and Latin version have come down to us, of which the former alone is in the College of Physicians' Library,[4] with a modern Latin translation by F. O. Dewez, published in Vienna in 1793. The book is in the form of a catechism, the first ten pages consisting of short questions:—"What is an obstetrician? By how many names is the uterus called? Where does the uterus lie? Of what nature is the uterus? How many coats has the uterus? Into what parts does the uterus fall? Where lies the os uteri? How far is it distant and backward? Of what nature is the os uteri? How large is it when closed? Where are the ovaries placed? Concerning the menstrual cleansing, why is it so called?" etc.

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[1] The extant works of Aretæus the Cappadocian, edited and translated by Francis Adams, LL.D., for the Sydenham Society, London, 1856, p. 361.

[2] *Ibid.*, p. 285. [3] *Ibid.*, p. 361.

[4] Μοσχίωνος περὶ τῶν γυναικείων παθῶν, Moschionis de mulierum passionibus liber. F. O. Dewez, Viennæ. Apud Rud. Gräffer et Soc., 1793.

Putting aside the first question, answered in the first section of Soranus which we have not translated, those that follow take up the topics treated in his anatomical chapter and in the same order, with the exception that the vagina and external genitals are passed over. The questions that follow are based on the topics of the next section of Soranus which deals with menstruation; and the topics throughout are on the whole the same as his and in similar order. The form of the book is an instructive example of how systematic and thorough the teaching at that time must have been. It is a catechism with 152 questions and concise answers such as might easily be committed to memory; and it has this further interest, that it contains what was thought to be the earliest drawing of the human uterus.[1] In our illustrations we have reproduced this drawing.

From the foregoing it will be evident that this work of Moschion's is based on the teaching of Soranus, though when Moschion lived, and what the exact relation of the two books to each other is, lies wrapped in obscurity. Moschion admits in his preface that his book is not an original, but a translation from a Greek text for the use of "Latin matrons and obstetricians[2] unskilled in the Greek tongue." This original Latin Moschion is lost. The Greek version, which we have in the College of Physicians' Library, is considered by Weber (quoted by Ermerins) to have been produced in the sixth century at Constantinople; and the extant Latin version is, according to the same authority, a still more recent reproduction of this Greek one.[3] Further, it is held by Weber and Ermerins that even the original Moschion is not based directly on Soranus, but on a work on Diseases of Women written in the fourth century by Cælius Aurelianus, who in his turn drew from Soranus. If this view be correct, we must place Moschion somewhere during the fourth century, or between it and the sixth.[1] These various editions of Moschion show that the book was widely used, and hence that the valuable work of Soranus in Gynæcology and Obstetrics was during these centuries not altogether lost. We only hope that the students of obstetrics of those days read Moschion not Galen.

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[1] I here mention the generally received view, but when we come to speak of Vesalius we shall find evidence that this drawing is a modern interpolation. The letters in the diagram are in Latin, those in the text in Greek, which shows, I think, that the cut is not of the same date as the text. As far as the mere lettering goes, we might consider the cut to be the older, for Dewez says that Moschion's original work was written in Latin. "Moschion," he writes, "as is evident from the preface to my MS., wrote this book for the sake of Latin matrons and obstetricians as being ignorant of the Greek tongue; therefore he wrote in Latin, not in Greek. It is not unlikely that time has destroyed the Latin work, and only the Greek version written in very late Greek has come down to us."

The terms in Moschion's text are the same as those of Soranus, except that the neck and isthmus together make the *χόριον* not *καυλός*, *πλεύρα* becomes *πλάγια*, and *πυθμήν* becomes *βάθος*. I think also that Moschion transposes the last two: for Soranus everywhere uses *βάσις* for the parts between the Fallopian tubes corresponding to the base on which the cucurbita or cupping-glass stands, while Moschion applies it to the "cavity," to which the term is clearly inapplicable. This may also be the reason why the word *πυθμήν* has dropped out (meaning, as it does, "*the belly of a flask*") and is replaced by *βάθος*—"*the deepest place.*"

[2] "Obstetrician" is the Latin *obstetrix*, showing that the art was at this time practised by women.

[3] "My (Weber's) own opinion is that the Latin fœtus was a product of the Schola Salernitana, to which we owe many translations of that kind."

It is interesting to follow the history of this book through its various stages in the light of these different editions: and we would suggest that the first Latin version, for the use of Latin-speaking matrons and midwives, was produced before the fall of the Western Empire in the fifth century; its Greek sister just fits in with the development of the Eastern or Greek-speaking Empire at Constantinople in the sixth century; and the version in barbarous Latin points to a later period, when learning was beginning to make way again in Western Europe.

During the following centuries, Anatomy suffered the fate of all science in the lethargic sleep of the Dark Ages. It fared even worse than other sciences, because Islamism distinctly forbade both dissection and the representation of parts of the human body.

It was not till the beginning of the fourteenth century that it roused itself again, and that in Italy where the world's life was intensest. The intellectual energy of Italy was at that time concentrated in the University of Bologna. Of the Bolognese School of Medicine at this time, Sir William Turner in his learned History of Anatomy[2] writes—

"The University of *Bologna*, which, as a school of literature and law, was already celebrated in the twelfth century, became in the course of the following one not less distinguished for its medical teachers. Though the misgovernment of the municipal rulers of Bologna had disgusted both teachers and students, and given rise to the foundation of similar institutions in Padua and Naples, and though the School of Salerno, in the territory of the latter, was still in high repute, it appears, from the testimony of Sarte, that Medicine was in the highest esteem in Bologna, and that it was in such perfection as to require a division of its professors into physicians, surgeons, physicians for wounds, barber-surgeons, oculists, and even some others. Notwithstanding these indications of refinement, however, anatomy was manifestly cultivated rather as an appendage of surgery than a branch of medical science. . . . In this state matters appear to have proceeded with the Medical School of Bologna till the commencement of the fourteenth century, when the circumstance of possessing a teacher of originality enabled this University to be the agent of as great an improvement in medical science as she had already effected in jurisprudence. This era, indeed, is distinguished by the appearance of Mondino, under whose zealous cultivation the science first began to rise from the ashes in which it had been buried. This Father of Modern Anatomy, who taught in Bologna about the year 1315, quickly drew the curiosity of the medical profession by well-ordered demonstrations of the different parts of the human body. In 1315, he dissected and demonstrated the parts of the human body in two female subjects; and in the course of the following year he accomplished the same task on the person of a single female."

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[1] Dewez informs us that Gessnerus is wrong in making Moschion live in Nero's time, for the son of that Julia Agrippina whom Moschion says he cured of sterility had the cognomen of Diogenes which Nero had not.

[2] *Encyclopædia Britannica*, ninth ed., vol. i. p. 805.

Though Mondino dissected three female bodies, he evidently did not examine the uterus, for in his *Text-book of Anatomy*, issued in 1316, he describes the uterus as containing seven cavities. This volume, as the first modern work based on dissection, gained such a position "that here and there in Italy it was decreed by law that anatomy should not be taught from any other book" (Haller). Mondino's text-book, with its defective and altogether erroneous description of female pelvic anatomy, was thus for the next two centuries the standard work in Italy. Soranus and Moschion lay buried and forgotten. It is for this reason that, although the revival of General Anatomy begins with Mondino, the revival of Obstetric Anatomy (which marks the commencement of our Third Period) does not date from him.

Towards the end of the fourteenth century a great impulse to the study of anatomy came from the students of Art. To Giotto's failures to represent hands and feet and the position of the limbs in different postures, we are more indebted for the revival of interest in anatomy than appears on the surface. The first anatomical drawings (for there are no illustrations in the works of Mondino), if not the first efforts to get at what lay below the skin, were by Leonardo da Vinci (1452–1518)—great in anatomy as in art. Not only have we his own anatomical drawings, but we read that he illustrated the anatomist Mark Antonio de la Torre's book for him.[1] Of Michael Angelo's work, Haller says,[2]—"Exact anatomical skill is seen in his drawings; nevertheless he represented muscles more stiffly than is right. Twenty-two anatomical plates of his are mentioned, which he drew himself." Choulant[3] gives a plate of one of his drawings, in which, although the skin is not removed, the muscles come out very strongly; alongside of the figure is a scale giving the proportions of the different parts of the body. Raphael also left behind him several anatomical studies.

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[1] Choulant's *Geschichte und Bibliographie der anatomischen Abbildung, etc.*, Leipzig, 1852, p. 6.

[2] *Op. cit.*, p. 164.

[3] *Op. cit.*, p. 11.

We thus find an intimate relationship established between anatomy and art, they rendering one another mutual assistance. Anatomy aids art by giving it what is below the skin—the significant in the anatomical substratum of a given posture or action. Art aids anatomy by giving it, according to Choulant, three forms of illustration: (*a*), the diagram; (*b*), the picture of an organ as an individual; (*c*), the representation of the type—the result of the study of many individuals, so as to get at the typical or normal, and eliminate the accidental or abnormal. This last is necessarily the result of many drawings of individual specimens, and represents what is common to all. This distinction made by Choulant is suggestive; for if we look at these three modes of representation comparatively we find that each has had its own place in history, and has now its own work to do. The first, or diagram, was earliest in history, for men could sketch in the general features of an organ before they knew it intimately (by "intimately" I mean in detail and exactly): its work nowadays is chiefly as an aid to expression in teaching—by a rough diagram one can often show what one means more quickly and more clearly than in words. The second, or drawing of the individual, came next—when a specimen of a given organ was first carefully studied and described: its work is in research, the gaining of new knowledge. The third, or drawing of the type, came last, when enough of specimens had been studied individually to allow of generalization: its work is in handing on what has been accumulated, *i.e.*, in teaching—in teaching only; it is of no use in research. The Diagram, the Picture of an Individual Organ, the Drawing of the Type: each does its own work as an aid to expression, research, teaching.

After this digression on these artist-anatomists and the service rendered by art to the study of anatomy, we return to the pure anatomists; and among them the name of Berengario da Carpi stands out, and with him we make our Third Period begin.

THIRD PERIOD.

This period commences with the work of Berengario da Carpi at the beginning of the sixteenth century, and it embraces also that of Vesalius, of Eustachi, and of Fallopio,—all of whom belong to the same century.

As we have said, we make this period begin with *Berengario da Carpi*, "primus humanæ anatomiæ instaurator," as Haller calls him.[1] Rightly "*instaurator*" (re-storer), for he only brings obstetrical anatomy back to where Soranus left it. Son of a surgeon, he studied anatomy from a boy. He took his degree at

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[1] *Op. cit.*, tom. i. p. 167.

Bologna, and, after teaching surgery for some time at Pavia, returned to his university town to fill the chair of surgery. The University of Bologna still retained its position as the first in Italy. As in Edinburgh now, the University was the pride of the town, which even adopted on its coins the University motto, "Bononia docet." As a school of painting, too, Bologna had become famous, especially through Francesco Francia, who did not die till 1517; so that, from the friendly relationship we have described between art and anatomy, we can well believe that Berengario, the professor of surgery, must often have met the distinguished artist and Master of the Mint. After leaving Bologna in 1527, Berengario lived for some time in Rome, where he became famous for treating syphilis by mercurial innuction, and made a large fortune, which he left to the Duke of Ferrari.[1]

Berengario did splendid work in Anatomy. He boasts of dissecting at least a hundred bodies. He was even accused of cutting them up alive, but his "*Anatomia vivorum*" refers to what a surgeon might see in the course of an operation. His first work was to publish (1521) a *Commentary on the Authorised Text-Book of Mondino.*[2] He gave the results of his own dissections in a separate treatise, the *Isagoge breves, etc.*,[3] which was published in the following year. Both of these works are noteworthy from two points of view:—(1.) They are the first text-books of anatomy *with illustrations*—the first efforts after an exact representation according to nature. The quaint attitudes and rugged execution are against them. The attitudes, representing the subjects as if alive, are an introduction of art into anatomy which the purely scientific spirit resents. The ruggedness is due to defective means of reproduction, and an interesting paper might be written on the influence of methods of reproduction on anatomical drawing—the Wood, Copper, and Stone Ages. Still, the illustrations of Berengario are truly artistic productions. Choulant[1] says of him:—"Himself engaged in art, and associated with artists and the friends of art, he has kept the artistic standpoint in his works." (2.) These two books are further noteworthy as *contributions to Obstetrics.* The only viscus which he considers worthy of reproduction is the uterus; and in making and publishing his section of it, he forever uprooted and cast out the erroneous teaching of Mondino. The plate represents a female figure standing with a veil behind her, which she holds over her head with the left hand. The abdomen is laid open; the uterus and cervix divided coronally. There is grim humour in representing the subject as holding in her right hand, for purposes of demonstration, the front half of the divided uterus and cervix. The description is as follows:—

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[1] We have the following quaint reference to him in Astruc:—"James Carpensis, as he was the only one who knew this secret medicine, viz., using unctions and quicksilver in curing the venereal disease, was rendered so rich by that alone, that he died attested of (left in his will) forty thousand crowns in silver, besides plate, all which he left to the Duke of Ferrari. For all the water, adds Fallopius, runs to the sea."—*A Treatise of Venereal Disease*, etc., by John Astruc. London, 1756. Book v. p. 155.

[2] "*Commentaria cum amplissimis additionibus super Anatomiam Mundini una cum textu ejusdem in pristinum et verum nitorem redacto.* Impressum Bononiæ per Hieronymum de Benedictis; pridie Nonas Martii. MDXXI."

[3] The College of Physicians' Library has not the 1522 edition, but this one of 1535, published at Venice (entered in the catalogue under the name *Berengarius Carpus*, as if it were the work of a different man from the author of the *Commentaria*):—"*Anatomia Carpi, Isagoge breves perlucide ac uberime, in Anatomiam humani corporis. a. cōmuni Medicorum Academia, usitatam, a, Carpo in Almo Bononiensi Gymnasio Ordinariam Chirurgiæ publicæ Docente, ad suorum Scholasticorum preces in lucē date.* Venetiis, Anno D. MCCCCXXXV." The title-page is adorned with a vigorous woodcut of Berengario at work among his pupils. On the last page of the book it is described as—"*Impressum Venetiis per Bernardinum de Vitalibus Venetum*, MDXXXV."

> "You have in the belly of this figure the uterus laid open, in which you will see certain black points indicating the heads of the veins, which are called cotyledons. You have, further, the uterus laid open outside the body, on which rests the index finger. And in the fundus of the uterus you will see a certain depression indicating a right and left half; but I have not found in the uterus any other division. The black points are the cotyledons, and you will see that the cervix does not possess these."

This illustration with descriptive note appears in the *Commentaries*, and is repeated in the *Isagoge*. The *Isagoge* gives in addition a plate of the uterus (reproduced in our illustrations) seen from the outside and laid open, with this note:—

> "Because things repeated ten times are wont to please, you have here two uteri, of which the one is turned outside-in, where you will see how, through the whole cavity, there are many black points indicating round cotyledons, which are not present in the neck. In the other figure you will see the natural womb with its testicles and spermatic vessels, and the ligaments with which its horns are bound. You will see also the neck and the os through which menstrual blood and fœtus pass and the semen enters."

Passing from the work of Berengario we come to the three other great contributions in the sixteenth century made by anatomy to obstetrics—those of Vesalius, Eustachi, and Fallopio.

Vesalius (1514–1564), a doctor's son, a native of Brussels, studied arts at Louvain, and medicine at Montpellier and Paris. He then returned to Louvain, where he began to teach anatomy, of which he became Professor at Padua in 1537, and his name thus comes to be linked with those of Fallopio and Eustachi in the Italian School of Anatomy. He worked chiefly at human anatomy, and, according to Choulant, secured the services of the best artists of the day to reproduce his preparations. He is even said to have employed Titian, but as that artist was upwards of sixty years of age when Vesalius published his first plates, it is more probable that Titian deputed his pupil Stephen von Calcar

[1] *Op. cit.*, p. 8.

to do the work. In 1538 he published his first six plates at Venice, and in 1543, when only twenty-nine years of age, his immortal work *De humani corporis fabrica libri septem.* Further, in 1546, in a letter *De radice chinæ epistola,* he criticised Galen's work, showing that that anatomist dissected not men but monkeys, and mixed up his conjectures from the dissection of animals with old descriptions—whence his mistakes as to the uterus and other organs. The College of Physicians' Library contains a 1555 edition of the seven books on Human Anatomy[1] and a 1564 edition of the plates.[2]

In the illustrations of the fifth book of his anatomy we have very fair representations of the uterus, cervix, and vagina—a great stride forward from the rude illustrations of Berengario First, we see (Fig. 24) the abdomen laid open, all the intestines cut away except the rectum, and the mesentery and omentum drawn aside so as to show the position of the uterus and bladder seen through the brim. Fig. 25 is similar, only the peritoneum has been dissected off. In the description he says, "we have as far as possible deprived the uterus of the outer covering which the peritoneum affords to it, removing all the membranes as thoroughly as possible, that we may see the vessels which carry the material of the semen to the ovaries, and again the seed from them to the uterus." From the plate and this description it is evident that Vesalius did not understand the Fallopian tubes. Fig. 26 shows the uterus removed from the body and seen from below; while Figs. 27 and 28 are very good drawings of the uterus and vagina removed from the body, the uterus being divided coronally. We have reproduced this figure, as far as it shows the uterus, in our illustrations. In Figs. 28 and 29 we have the uterus of the dog and the cow. Fig. 30 shows a pregnant[3] uterus laid open, also the fœtus and membranes; Figs. 31 and 32 the ovum from the dog and the ox. In the edition of anatomical plates referred to we have most of these figures reproduced in one plate, and in addition exactly the same drawing of the uterus as we have seen in Moschion's work, but with different letters and modern description. The mode of representing the ovaries and vessels resembles the other drawings of Vesalius; it shows the uterine artery which was not known to Moschion; all the other illustrations of Vesalius are apparently of his own dissections and no mention is made of

[1] *Andreæ Vesalii* Bruxillensis, scholæ medicorum Pativinæ professoris, de Humani corporis fabrica, libri septem. Basileæ, ex officino Joannis Oporini, anno salutis per Christum partæ MDLV. mense Augusto.

[2] *Anatomes totius, ære insculpta delineatio, cui addita est epitome innumeris mendis repurgata, quam de corporis humani fabrica conscripsiit clariiss.* And. Vesalius. Paris, MDLXIIII.

[3] Is this from a human subject? Haller says in a foot-note (*Op. cit.*, tom. i. p. 182):—"Vesalius confesses that he had rarely cut into a gravid uterus (*Rad. Chin.*, p. 207) and had not yet dissected one when he was publishing his work."

this illustration as being borrowed from Moschion: for these reasons we think that the illustration in Moschion's work is a modern interpolation, which would deprive Moschion of the credit of being the first to give an illustration of the uterus.

Of the life of Vesalius, after publishing his immortal work, Haller says:—"The very fame of Vesalius spoiled his splendid work. Having become the first authority by his success in treatment, he spent the great part of his life after this at the court of Charles V. and Philip II.—a most acceptable court-physician, but shut out from all anatomical work except sometimes the examination of men dying from some unusual disease. Hence he did not add to nor correct the new edition of his great work in 1555, as might have been expected from his zeal for anatomy." He died in 1564, on a pilgrimage to Jerusalem, the generally received reason for which journey Haller endorses: he had cut down on the heart of a man who had just died so as to feel it beating with his hand, and through the clemency of Philip II. was allowed to expiate this crime by a pilgrimage to Jerusalem; on his way home he was called to take the place of Fallopio at Padua, but was wrecked on his journey thither.

Eustachi (1500-1574).—The anatomical engravings of Bartolomeo Eustachi, or Eustachius as he is more commonly called, were, according to Sir Wm. Turner, completed in 1552 (nine years after the impression of the work of Vesalius), but were not published till nearly two centuries afterwards (1714) by Lancisi.[1] This book is in the College of Physicians' Library. There are two plates of the uterus—one showing the arrangement of the vessels, especially their relation to the round ligament. The descriptive notes to the plates are by Lancisi. The next plate shows the external genitals and the fundus as seen through the brim; the uterus and vagina removed from the body, seen from the outside and in coronal section; the human fœtus with its membranes (chorion and amnion) and the placenta lying separate.

With *Gabriel Fallopio*, or Fallopius as we usually call him (1523-1563), Haller[2] makes the Italian School of Anatomy begin, "which from the Revival of Learning during the following century was supreme, so that there were few anatomists who did not go out from it." In the course of a short life (he died at forty) he greatly enriched anatomy. Besides being unwearied in research, he was a blameless man, "unjust to no one, except, perhaps, Eustachius—a bitter man to whom none of his contemporaries were friendly."

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[1] Tabulæ Anatomicæ Clarissimi viri Bartholomæi Eustachii quas è tenebris tandem vindicatas et sanctissimi domini Clementis xi. Pont. Max munificentiâ dono acceptas præfatione notisque illustravit, ac ipso suæ Bibliothecæ dedicationis die publici juris fecit Jo. Mariz Lancisius. Rome, 1714.

[2] *Op. cit.*, tom. i. p. 218.

His chief work was his Anatomical Observations published at Venice in 1561; the earliest edition of it in the College of Physicians' Library is in the complete works of Fallopius, published at Frankfort in 1600.[1] In these Observations[2] he devotes several paragraphs to the organs of generation in the female. After mentioning that the term cervix is often wrongly applied so as to include vagina, and that it should be limited to that part in which the os uteri is, he describes the clitoris as follows:—

> "It springs by a double origin, one from each bone of the pubis, and in both the aforesaid origins it has plainly muscular tissue, though little for the size of the structure. There are vessels running along the dorsum just as in the male member, and it ends in a certain extremity which looks like the glans, being contained in a sort of skin like the prepuce, which skin unites those two structures of the external genitals which are called by the Greeks, especially Soranus, Pterygomata. All this part of the pudenda as it is small and hidden in the more fatty part of the pubis has thus escaped the notice of anatomists, and so escaped it that I have been the first to lay bare the same in recent years."

Of the hymen he says:—

> "There is another structure to be noted in this sinus in women, which anatomists sometimes find and laugh at those who place a membrane there. But to my mind they are not thus to be laughed at." And he goes on to describe it as a membrane not entire, "but perforated in the middle by a hole of such a size that in adults the point of the little finger can easily enter." He refers to Soranus's difficulty with regard to it, and says: "For the satisfaction of that great man let me say that the membrane does not seem to me very firm, and is perforated like a ring."

Of the uterus he writes:[3]—

> "I now come to the uterus, in which, if I explain my view openly, I doubt not that you will smile, since I am about to say things which not only contradict the accounts of the ancients and moderns, but also overturn completely certain teachings, or at least make them totter. Nevertheless, I shall not desist nor fear the quiet smile of a learned man, since I shall recount what I have seen again and again with my own eyes, and also showed openly to others."

He then describes the round ligaments:—

> "They are not muscular, although they appear somewhat red and fleshy, but are twin fibrous processes springing from the sides of the uterus, and sometimes filled up with a fleshy cord so that they look red. Ascending to the inguinal region and perforating the peritoneum just as the seminal vessels do in the male, they pass out through the opening of

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[1] Gabrielis Falloppii Mutinensis Physici ac Chirurgi præclarissimi in felicissimo Gymnasio Patavino olim rem Anatomicam et Chirurgicam admirabili cum laude profitentis: Opera omnia, in unum congesta et in medicinæ studiosorum gratiam excusa, etc.: Francofurti apud hæredes Andreæ Wecheli, MDC.

[2] *Opera Omnia*, p. 420.

[3] *Op. cit.*, p. 421.

the tendon of the descending oblique muscles ; . . . . and when outside the abdomen, they turn slightly towards the pubis, and there end through being lost in the fat."

Of the ovaries, he says :—

> "All anatomists assert with one voice that semen is made in the female testes, and that they are found full of semen, which I could never see although I gave no small labour that I might learn this. I have seen in them indeed some vesicles as it were turgid sometimes with water or a watery fluid, sometimes yellowish, sometimes limpid ; but I have never seen semen except in the spermatic vessels themselves or those called 'excretory.' They affirm also that those spermatic vessels spring from the ovaries, and are united completely to them, and end in the so-called horns of the uterus, which is not at all the case, since I could never see those seminal tubes united to the testes unless the uterus was pathological."

After commenting on this, he thus describes the tubes with which his name has ever since been associated :—

> "That slender and narrow seminal duct rises, fibrous and pale, from the horn of the uterus itself ; becomes, when it has gone a little bit away, appreciably broader, and curls like a branch (capreolus) until it comes near the end, then losing the horn-like curl, and becoming very broad, has a distinct extremity which appears fibrous and fleshy through its red colour, and its end is torn and ragged like the fringe of well-worn garments,[1] and it has a wide orifice which lies always closed through the ends of the fringe falling together ; and, if these be carefully separated and opened out, they resemble the orifice of a brass trumpet. Wherefore since the seminal duct from its beginning to its end has a likeness to the bent parts (capreoli) of this classic instrument, separate or attached, therefore it has been called by me the *Uteri Tuba*. These are present not only in the human bodies, but also in the sheep, cows, and all other animals which I have dissected."

He further describes[2] the blood supply to the uterus, showing that there are two sources on either side—what we now speak of as the ovarian and uterine arteries—and that there is an anastomosis not only between these vessels on the same side, but between those of opposite sides. It is noteworthy that Fallopius made out this anastomosis before the injection of vessels was used as an aid to dissection.

> "The spermatic arteries and veins (although anatomists may affirm that, as in man, they mingle before they come to the ovaries) are sometimes carried without uniting[3] beyond the ovaries, and thus go so plainly to the uterus itself and the seminal duct [Fallopian tube], which most of them surround, that they can be recognised by every one ; for there belongs to the uterus a double set of arteries and veins—the one the seminal [ovarian], coming down from above ; the other those which spring from the sides of the vessels of the sacrum. The latter, they say, are spread over the sinus, or (to use their term) cervix ; the former over the uterus itself or fundus. But it should be known that these upper vessels, before

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[1] Extremumque lacerum valde et attritum est veluti sunt pannorum attritorum fimbriæ.

[2] *Op. cit.*, p. 422.

[3] "Sejunctæ aliquot ultra testem feruntur."

> they are all spread out, anastomose in the uterus with some from below, and thus united enter the part of the fundus near the cervix or the sinus [vagina] itself; also that, although now and then they go to join other vessels,[1] some branches from those lower vessels pass upwards to supply the fundus, which, as soon as they enter the substance of the uterus, anastomose, or are united with the aforesaid vessels from above. Thus there is always present a continual anastomosis, either outside the uterus or immediately beneath the peritoneum which covers the uterus, or in the substance of the latter. I think that this anastomosis has been neglected by anatomists, because during pregnancy the very copious supply of blood brought by the seminal vessels (as is evident in some pregnant persons) may be discharged into the vagina through these lower veins, whereas otherwise the monthly discharge is got rid of directly through the fundus uteri. I could not be laughed at by anatomists were I to say that in the substance of the uterus itself some twigs of those vessels of the right and left side are so united that the vessels become one. I do not say all of them, but some; and therefore that there is a community between the vessels on the right and left, and that nutriment is carried to the fœtus by both kinds of vessels, although the umbilical ramifications [in the placenta] throw their roots into one side of the uterus only."

In the next paragraph he touches on the anatomy of the pregnant uterus,—

> "One thing, finally, I have observed in all the women whom I have dissected who died either during or immediately after or before labour, that the piece of flesh which is called by me placenta always occupies or sticks to one of the two portions of the uterus in which ends the opening of the seminal duct (Fallopian tube); and this also I have noted, that this opening is, as it were, the centre of the whole space occupied by the placenta.
>
> "In those parts which belong to the fœtus I have some points in which I differ from the rest of anatomists,—(1st), This, which I said when I was treating of the umbilical arteries, that without doubt the arteries which are carried with the umbilical vein and urachus to the fœtus are alway double in nature,[2] though often there is one only, which, as it is formed of the two large arteries of the chorion joined, also divides into two before entering the umbilicus, so as to pass to the arteries of the sacrum; (2nd), That the fleshy cake which coalesces with the uterus for the sake of the security of the vessels is never to be considered among the membranes of the fœtus.
>
> "Although some say that Galen called it chorion, this is false; for Galen knew it well, not, indeed, in man, but in other animals, and calls it 'flesh concreted round the mouths of the vessels,' but not chorion."

It is worthy of note that Fallopius here speaks of having dissected cadavera from women in labour and post-partum, but the passages quoted are all that he tells us of the anatomy of the pregnant uterus. In the next paragraph he says that Hippocrates called this concretion (placenta) "cotyledons," which leads him into an excursus[3] on the history and use of that term. He shows that Diocles, quoted by Soranus, held them to be mammae; Praxagoras and Galen to be crater-like eminences at the mouths of vessels; while Aristotle described them as little cups (κοτύλοι, used by Homer for "cups"), convex towards the uterine wall, with nutritive material heaped up in them (like a phlegmon producing a tubercle), which exudes into the fœtus.

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[1] In conjuncta inferantur—lit., are borne into joined vessels.

[2] Nempe perpetuo geminas esse arterias.

[3] *Op. cit.*, pp. 422–424.

> "Therefore the cups (or cotyledons) are those things of which Aristotle spoke, and truly they are not found in the human or canine uterus as anatomy teaches, but only in that of horned animals and of those mentioned by Aristotle; . . . and only in pregnancy."

At the conclusion of this argument he points out the error of Hippocrates with a grace and dignity, as well as a desire to put the best construction on what another had taught, worthy of imitation:

> "This being settled, what shall we say if Hippocrates mentions 'cups'? May the Manes of so great a man spare me, a man who was the presiding deity of the medical art, when I say that he spoke the truth in words that deceived! For if any one would doubt (my opinion) that crude or cold humours or even mucus contained in the uterus are the cause of abortion, he would walk blind in daylight; but that these humours are contained in cotyledons is false, because there are no cotyledons. In the mouths of vessels these humours may be contained, but being there they would by no means cause abortion."

Fallopius made another contribution to Obstetrics in his description of the bones of the fœtus in the *Expositio de Ossibus*—in Haller's quaint language, "Ossa enim fœtūm primus inter mortales contemplatus est."

These four men—Berengarius, Vesalius, Eustachi, and Fallopio—made the chief contributions of anatomy to obstetrics during the sixteenth century; and with that century our study of the "early contributions" should end. Important their contributions were—so important that on the first superficial glance over the field it seems as if the harvest were reaped, and little left to be gathered in. Dr John Barclay, the Extra-Academical Lecturer on Anatomy in Edinburgh at the beginning of this century, has thus wittily compared the work done by these men with that of those who followed them:—

> "Gentlemen, while carrying on your work in the dissecting-room, beware of making anatomical discoveries; and, above all, beware of rushing with them into print. Our precursors have left us little to discover. You may perhaps fall in with a trifling supernumerary muscle or tendon, a slight deviation or extra branchlet of an artery, or perhaps a minute stray twig of a nerve,—that will be all. But beware! Publish the fact, and ten chances to one you will have it shown that you have been forestalled long ago. Anatomy may be likened to a harvest field. First come the reapers, who, entering upon untrodden ground, cut down great store of corn from all sides of them. These are the earliest anatomists of modern Europe, such as Vesalius, Fallopius, Malpighi, and Harvey. Then come the gleaners, who gather up ears enough from the bare ridges to make a few loaves of bread. Such were the anatomists of last century—Valsalva, Contunnius, Haller, Winslow, Vicq d'Azyr, Camper, Hunter, and the two Monros. Last of all come the geese, who still contrive to pick up a few

> grains scattered here and there among the stubble, and waddle home in the evening, poor things, cackling with joy because of their success. Gentlemen, we are the geese."[1]

Dr Barclay's humorous statement does not hold true of the anatomy of obstetrics, for while the contributions hitherto made by anatomy to obstetrics deal principally with the anatomy of the uterus before pregnancy, a little consideration will show us that the field of the anatomy of pregnancy and labour was before the eighteenth century unreaped.

To throw a bridge over the gap between the "early contributions" and the work of more recent date, we shall just touch upon one or two names familiar to us in obstetrical anatomy, and thus join the old with the new. In the seventeenth century we have two names—*Malpighius* (1628 to 1694), and *Graafius* (1641 to 1673). Malpighi was Professor of Anatomy at Messina and Bologna, and published in 1681 his monograph, *De Utero Epistola*, in which he describes the mucous glands in the uterus of the calf, the muscular fibre of the wall, and the corpora lutea of the ovary. *R. de Graaf*, whose name has become immortal in the Graafian follicle, published at Leyden in 1672 his *De Mulierum Organis Generationi inservientibus;* and shortly before his premature death, his *Partium Genitalium Defensio.* In the former of these he describes—in the human female—the uterine vessels and those of the fœtus, the corpus luteum, and the mucous glands of the uterus.

In the eighteenth century, most of the names group themselves round the illustrious *Haller* (1708-1777), and we cannot refrain from quoting from a bit of autobiography he gives us[2] in his work to which we so often have had occasion to refer. "I may be allowed here to review my life—that part which belongs to anatomy. Knowing too well how unequal I was to the great task I undertook of building up physiology from the foundation, I shall show, if I do not mistake, that I made some efforts to get nearer the truth." After dissecting animals at Tübingen under Duvernoi, who used dogs when human bodies failed, he went a mere boy to Leyden to attend Boerhaave's lectures. "I heard Boerhaave's lectures," he writes, "with incredible pleasure."

> "That incomparable man gave his teaching so honestly, clearly, and fully, that while he might have equals in matter, he had none in the art of teaching. I worked alongside of Albinus with no small reward, imitating on the opposite side of the body what this distinguished man was demonstrating to his industrious students on the other. . . . . I often went to the excellent old man Ruysch, frequently with commissions from Boerhaave. There was in him the greatest zeal, patient work in injection, and he was very skilful in preserving bodies. In 1727, I went to England, and became acquainted with James Douglas, from whom I might have derived much greater benefit—for the great man allowed me

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[1] *The Story of the University of Edinburgh*, by Sir Alex. Grant, Bart. London: Longmans, Green, & Co.: 1884. Vol. ii. p. 390.

[2] *Op. cit.*, tom. ii. p. 195.

> to share in the work which he was carrying on diligently in completing the description of the bones. I saw, and with no small admiration, his great wealth of skeletons and bones—some lying with their ligaments in salt water, others cut in every direction with a saw. But the great rush of people from the whole of Europe for the inauguration of the new king—that prince to whose munificence I owe much, George the Second—drove me to Paris. There I heard Le Dranium as a guest, and dissected with him. I confess (may the good old man forgive me) that I was disappointed at the paltriness of what was called the theatre, and by the too rapid dissection which could not investigate anything very carefully. Further, when I saw Winslow tracing out the most minute parts of the human structure, I was not satisfied until, along with a surgeon de la Garde, I got at my own expense secretly a supply of dug-up dead bodies in which I might examine the nerves and vessels of the heart, the muscles of the hand, and other things, more carefully and with something of the detail of Winslow. But the spiteful curiosity of a labourer overturned this opportunity of learning ; for having dug under the wall to see what I was doing, he reported my name to the guardians of public safety. To escape heavy penalty, perhaps the galleys, I had to hide, and have the bodies removed."

After other appointments, we find him settled at Göttingen. Of his work there he says :—

> "I had only to build an anatomical theatre and procure a supply of bodies. I arranged that the bodies of criminals should be brought to me from all parts to be dissected, that those of the illegitimate should also be handed over, and thus I got an ample supply of cadavera, especially of children. It was thus easy for me to prosecute with greater zeal the anatomy of the arteries, which at that age could be better demonstrated than the muscles, and had been incompletely, even erroneously described, for the beautiful injections of the Belgians were directed rather to the intricate arrangement of the minuter vessels than to the more general distribution called popularly "Angiologia."

Haller had the faculty not only of continuous labour himself, but also of setting others to work ; and if we owe a great deal to him, we owe much also to his students.

> "Further, another idea very fortunately occurred to me. When I saw numerous eager young students flocking to the new academy and seeking the highest honours, I advised each to take up for himself some difficult point of anatomy or physiological question, to which he might devote himself for two winters. There were plenty of cadavers at their command ; I helped the studies of the young fellows as much as I could, and made many investigations (*experimenta*) on different animals—in fact, an incredible number. Accordingly, as several of the young men were simultaneously devoting their leisure, which was greater than mine, each to a single part of our noble art, much more progress was made than any industry of mine alone could have effected. To this day it gives me the greatest satisfaction to turn to the exquisite descriptions of the nerves by Meckel, Anderschen, and others, that careful study of the sheep which Kuhlemann undertook, and the admirable anatomical preparations of some of the rest of the young men. Nor has light failed to shine from this Institution upon Physiology.
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> "But as human affairs are imperfect, I, who had been called from clinical practice to anatomy, was compelled to lay aside such inquiries ; being driven from lecture-room and chair by failing health, loss of sleep, and a weakness of the right hand which threatened paralysis. I had to

> sacrifice honours, rewards, and the hope of learning and achievement dearer than all these, to the preservation of life and health. Labours of a very different kind were awaiting me in my native land, which those coming after me will hardly believe to have been imposed upon me, unless they be familiar with the genius of free republics.
>
> "Nevertheless from the hours claimed by my country, I snatched some for myself. As opportunity offered I measured carefully the motion of the blood, investigated the form of the bones and the rest of the fœtus, dissected pregnant animals, studied the anatomy of brain and eyes, and worked also at pathology; I thus kept up in some degree my practice in anatomy."

He speaks thus regretfully of having to give up his time to public affairs:—

> "I have always praised the good fortune of Albinus, and should almost have envied it if that loftiest of men had not used so well the great opportunity he had. This distinguished man gave more than fifty years to a single art, drawn aside by no other duties; he was able to forego all honours for the perfecting of his subject."

The latter part of his life was given to legal and political work, and he writes thus sorrowfully of his having to give up his favourite studies for public duty:—

> "My lot drove me to the different departments of law, to a laborious magistracy, to the care of the Republic, to difficult negotiations with neighbouring states and kings, and to various other duties. Therefore let a generous posterity pardon me if I have not done more than I was able for, have left here and there some things incomplete, and have been compelled to take some things from others since I could not have observed everything myself. Let them, I pray, take the will for the deed."

To almost all of those whose names are mentioned in this interesting bit of autobiography, Obstetrics is indebted for some anatomical contribution. *Albinus,* with whom Haller dissected in Paris, has given us seven plates of the gravid uterus, published at Leyden in 1747.[1] The plates are drawn full-size, and are beautiful as works of art, but they lack the accurate anatomical detail which characterizes Hunter's work. "The excellent old man *Ruysch,*" a native of the Hague and professor at Amsterdam, is known to us as the author of the "*Tractatus de musculo in fundo uteri observato, antea a nemine detecto;*" in this he describes the muscular fibre of the fundus uteri as forming a *detrusor placentæ.* The *James Douglas,* whose wealth of skeletons and bones excited Haller's admiration, is better known to us as the describer of the peritoneum round the uterus, and especially of the pouch which bears his name.[1]

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[1] *B. S. Albini Tabulæ septem uteri mulieris gravidæ cum jam parturiret mortuæ.* Lugduni Batavorum, MDCCXLVIII. In the College of Physicians' Library we have these bound up with his magnificent plates of the bones and muscles. Plate I. is an outline of the figure of the uterus; Plate II., one-half of the uterine wall removed, showing the ovum in the cavity; Plate III., one-half of the membranes in addition removed to show the fœtus; Plate IV., fœtus removed, showing placenta attached to the uterine wall; Plate V., uterus and placenta removed from body; Plate VI., the complete ovum; Plate VII., uterine cavity with ovum removed, showing placental site. An appendix shows the attitude of the fœtus in utero.

To the idea which fortunately occurred to Haller of advising his students to take up an anatomical point, and work at it for a graduation thesis, obstetrics is greatly indebted. Volume V. of his Selected Theses on anatomical subjects is devoted to the Organs of Generation.[2] In it we find, amongst others, his own dissertation on the "Oblique Situation of the Uterus, and the Seminal Vessels;" Naboth's essay on "Sterility in Women," which survives in the name of the Nabothian follicles of the cervix; also Vater's essay on the "Gravid Uterus," giving a drawing of a six-months' pregnant uterus—one of the very early representations of the Gravid Uterus.

To Edinburgh men it will be of interest to know that amongst Haller's students was *Donald Monro*, son of Alexander (Monro primus), the Professor of Anatomy in our University. He read before an Edinburgh society a paper[3] on the maternal and fœtal vessels in the placenta, showing by injection that there is no communication between them. His father had read before the same Society an elaborate essay on the "Nutrition of Fœtuses;" and in the same volume we have two essays on the Anatomy of the Pregnant Uterus, from his younger brother Alexander Monro, "student of medicine in the University of Edinburgh."

Another of Haller's pupils was the distinguished anatomist and obstetrician *Rœderer*, whose seven plates[4] of the gravid uterus are less diagrammatic than those of Albinus, the drawings of cervix and ovary being especially good. Along with the plates of Albinus and Rœderer we must mention those of another famous man, although his name is not connected with that of Haller. In 1754 *Smellie* published in London his beautiful series of plates, which are so well known to English obstetricians that I need say nothing about them. Our reason for mentioning Smellie's name here is that we regard the work of Albinus, Rœderer, and Smellie as together forming the first considerable contribution to the anatomy of the uterus in pregnancy in contrast to that of the non-pregnant organ, which had up to that time monopolized attention. This subject was during the eighteenth century systematically worked out, and attained its greatest development in the hands of William Hunter.

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[1] A Description of the Peritoneum and of that part of the Membrana Cellularis which lies on its outside, with an account of the true situation of all the Abdominal Viscera. London, 1730.

[2] *Disputationum Anatomicarum Selectarum. Vol. V. Organa generationis, Collegit edidit præfatus est Albertus de Haller.* Gottingæ apud Viduam Abram Vandenhœck, Acad. Typogr. MDCCL.

[3] The Dissection of a Woman with Child; and Remarks on Gravid Uteri: By Dr Donald Monro, Physician at London. Article 17 in *Essays and Observations, Physical and Literary*, vol. i. p. 403. Edinburgh, 1754.

[4] *Icones uteri humani observationibus illustratæ.* Gottingæ sumptibus Vandenhœckianis, MDCCLVII. Plate I. represents a parturient uterus seen from the outside; Plate II., same uterus laid open to show fœtus and placenta in their natural position; Plate III., same with fœtus removed to show placenta; Plate IV., gravid uterus at the sixth month, seen from the outside and with vessels injected; Plate V., fœtus and placenta in natural position; Plate VI., internal surface of same gravid uterus as V., showing filamentous tunic of secundines, openings of tube and of cervix into uterus, and cervical canal laid open; Plate VII. shows internal surface of the cervix, virgin uterus from outside and in coronal section, ovary of virgin, Graafian vesicles, ovary of pregnant woman, and various corpora lutea.

By this brief survey of the work of the seventeenth and eighteenth centuries we have sought to bridge over the gap between the "Early Contributions of Anatomy to Obstetrics" and the work of Hunter, which we have dealt with in a former paper[1]—his immortal contribution, "The Description of the Gravid Uterus."

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[1] "Sectional Anatomy of Labour," *Transactions of the Edinburgh Obstetrical Society*, 1886-1887, and *Edinburgh Medical Journal*, 1887.

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